



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION I  
JOHN F. KENNEDY FEDERAL BUILDING  
BOSTON, MASSACHUSETTS 02203-0001

August 29, 1996

Mr. Philip Otis  
U.S. Department of the Navy  
Northern Division - NAVFAC  
10 Industrial Highway  
Code 1811/PO - Mail Stop 82  
Lester, PA 19113-2090

Re: EPA Comments on the Draft Final Proposed Plan for Allen Harbor Landfill (Site 9), dated 2 August 1996, at the former Naval Construction Battalion Center, Davisville, Rhode Island (NCBC)

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Dear Mr. Otis:

Pursuant to § 7.6 of the NCBC Federal Facility Agreement (FFA), the Environmental Protection Agency (EPA) has reviewed the above-referenced document.

The Navy has demonstrated a willingness to resolve EPA's outstanding comments on the Site 9 Draft Final Phase III Remedial Investigation (RI) and Draft Feasibility Study (FS) by the submission of revised reports that address many of the comments forth in my June 6, 1996 letter. We have agreed to resolve outstanding issues relating to the leachate/ground water modeling during the Site 9 remedial design phase. However, this proposed plan should state that if the studies to be performed under Alternative 3 show the groundwater to be a significant contributor to the sediment contamination at the toe of the landfill, then the Navy will construct the double barrier cap and ground water containment walls evaluated as part of Alternative 4.

EPA also recognizes that the Navy has satisfied many of the specific comments contained in EPA's June 12, 1996 comment letter relating to the Draft Proposed Plan. However, while the Navy has taken steps to remove many of its dissenting statements from the draft, the above-referenced Draft Final Proposed Plan still contains a number of statements which EPA has previously taken issue with (e.g., language which calls into question whether the Navy in fact views Alternative 3 as the Navy's preferred alternative). As noted in our June 12, 1996 comment letter, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires that the Navy, as lead agency, clearly set forth the Navy's preferred alternative. 40 CFR §300.430(f)(2). To do otherwise will only serve to confuse the public. Therefore, EPA's enclosed comments on the Draft Proposed Plan reflect our earlier comments on the draft. EPA believes that it is critical that the Navy make the changes contained in these comments before



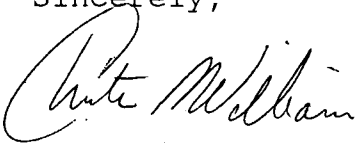
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the Proposed Plan is issued.

Please provide EPA with written responses and redlined replacement pages (by e-mail or fax) to the EPA comments in this letter. EPA remains hopeful that we can avoid formal dispute resolution.

If you have any questions, please call me at (617) 573-5736.

Sincerely,



Christine A.P. Williams  
Remedial Project Manager  
Federal Facilities Superfund Section

Enclosure

cc: Richard Gottlieb, RIDEM  
Walter Davis, CSO  
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Bob DiBiccaro, EPA  
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Mary Sanderson, EPA  
Sarah White, EPA  
Howard Cohen, RIEDC  
Marilyn Cohen, ToNK  
Jim Shultz, EA Eng.

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1. Page 1, ¶ 1; "Containment of fill constituents" implies that ground water, which strictly speaking is not a landfill constituent, is not at issue. The groundwater is part of the OU that is being addressed at this site. Replace the words "containment of fill constituents" with the words "contaminated soils, sediment and ground water".
2. Page 1, ¶ 2; delete paragraph. This paragraph confuses readers. The Navy should start the identification of the remedy with the proposed remedy, not one that does not meet threshold criteria. See Comment 3 and 4.
3. Page 2, ¶ 1; delete first sentence. EPA's position of a "more conservative approach" transcends the "inherent" uncertainty of the investigation process, and is further based simply on the lack of sufficient data for near shore sediment and ground water, lack of time-series data for these media, etc.
4. Page 2, ¶ 1, line 3; add a sentence before the second sentence to read: "The proposed remedy to address surface soil, sediment and groundwater contamination at the Allen Harbor Landfill is Alternative 3, Multimedia Cap, with Alternative 4, Multimedia Cap with Vertical Barriers, as the contingency remedy if Alternative 3 proves not to be protective."
5. Page 2, ¶ 1, line 3; delete the words "The Navy has accepted this approach and proposes a remedial action which includes" reword the beginning of this sentence to state: "Alternative 3 includes a multimedia cap"
6. Page 2, ¶ 1, line 5; after the word "liner", insert the words "and which meets the requirements of RCRA, Subtitle C".
7. Page 2, ¶ 2; delete the second sentence, and insert the following:

Based on the information, the Navy, EPA and RIDEM will determine whether or not the following additional groundwater containment measures are required as part of this preferred alternative for effective long-term risk management of this site: (1) upgradient slurry wall, and (2) downgradient sheet pile wall.
8. Page 2, ¶ 2; the time line for additional sampling should be discussed here. The Navy should sample the ground water seasonally, at least for some wells, this coming year. Therefore, a decision on whether or not to implement the contingency of Alternative 4 would be made within the 15 months after the effective date of the ROD.
9. Page 2, ¶ 2; the time line for additional sampling should be discussed here. The Navy should sample the ground water seasonally, at least for some wells, this coming year. Therefore, a decision on whether or not to implement the contingency of Alternative 4 would be made within

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the 15 months after the effective date of the ROD.

10. Page 3, last paragraph; the proposed double barrier cap will eliminate not just minimize precipitation infiltration. Please change the wording here and throughout the document.

11. Page 7, ¶ 1; Inclusion of a site photograph would be beneficial.

12. Page 7, ¶ 2; There is no mention of chlorinated solvents as components of the waste stream despite considerable discussion of them both in terms of both current and hypothetical future scenarios in following sections of the text.

13. Page 7, section 3.3; the deactivation of the landfill was the only remedial action done to date on the landfill. Please delete the last sentence.

14. Page 8, ¶ 3; The contaminants which were "infrequently" detected are listed. One could argue that the "frequently" detected contaminants deserve an equal if not greater presentation, yet they are not mentioned here. For example, VOCs are not listed as "infrequently" detected. The reader, therefore, is left to infer that they were frequently detected? The text would be more much more cogent if the frequently detected contaminants were also briefly listed.

15. Page 8, ¶ 3; EPA does not agree with the last sentence. The risks on tables 6-52 and 6-53 of the Site 9 Phase III RI and the criteria exceedences on tables 2-26 and 2-25 of the Site 9 Phase II RI indicate more than low concentrations and infrequent detections of contaminants. Re-word the sentence to state, "Metals, pesticides, and PAHs were detected in Site 09 ground-water samples and in near-shore sediments along the toe of the landfill".

16. Page 8, ¶ 4; The statement that, "VOC are present in isolated areas rather than as elongated plumes," is misleading. As pointed out in previous EPA comments, it is difficult to determine the axial length of the "plumes" as there are currently no monitoring wells downgradient of the landfill footprint. In fact, the entire landfill area would more appropriately be described as the "source area". In this context the "isolated" areas of VOC become a function of the scale of investigation which currently contains enough detail to distinguish contaminant zonation (i.e. 'hotspots') in the source area, yet offers very little information on the downgradient extent of any plumes. Concentration gradient information, although limited, does suggest that contaminant plumes do extend eastward beyond the landfill. In conjunction with clarifying this point, the Navy should add a definition for "plume" to the glossary.

17. Page 8, ¶ 4; Language similar to the following should be added to the end of this paragraph; "However, high concentrations of VOC in ground water suggest that residual DNAPL is contained within the aquifer pore spaces in limited areas of the subsurface."

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18. Page 8, section 3.4; create an additional paragraph for the Phase III RI results.
19. Page 9, Section 3.4.1; The first instance that the concept of soil "units" is introduced, "layers" should be added in parentheses in order to be more understandable to the public.
20. Page 9, Section 3.4.1, ¶ 1; The sentence beginning with, "These subsurface fill/soil units..," would benefit from an introductory statement such as, "In order to facilitate analysis of ground water conditions at the site,...".
21. Page 9, Section 3.4.1, ¶ 1; The various units have actually been grouped into the various Layers, rather than having been "divided". Changing this wording may enhance the public's understanding.
22. Page 9, Section 3.4.1, Layer 1; Suggest adding "(zone)" after the word "interval".
23. Page 9, Section 3.4.1, Layers 2 and 3; Suggest rewording the final sentence for each of these sections as follows: "...because many of the Phase I/II RI monitoring well screens straddle the Layer 2/Layer 3 interface and hence include portions of both of these two units (layers)..".
24. Page 10, ¶ 1; One sentence should be added to this paragraph; suggest the following: "The configuration of the bedrock surface is irregular, but generally slopes downward to the east and northeast."
25. Page 10, ¶ 2; The following information should be added to the discussion concerning the nature of ground water discharge: "However, the precise locations and nature of ground water discharge to surface water and subtidal sediments have not yet been determined."
26. Page 10, mid page; review by hydrogeologists indicates the deep groundwater must discharge to the Harbor floor at some point. The previous sentence that states that layer 2 groundwater discharges "into the floor of the harbor at increasing distances from the Site shoreline with increasing depth," should be made for the deep groundwater. As the paragraph is now written, it sounds as if the deep groundwater never impacts Allen Harbor.
27. Page 10, Section 3.4.2, ¶ 1; The following information should be added to the discussion concerning the presence of NAPL: "However, elevated concentrations of CVOC in ground water, which is suggestive of residual DNAPL, were identified in localized areas."
28. Page 11, ¶ 1; For completeness, a sentence should be added which describes the frequency and range of metals detections in soil.
29. Page 11, ¶ 2; Suggest adding the following text: "...from holes, dug into the site shoreline

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sediment, which were adjacent to areas where seeps had previously been reported."

30. Page 11, Section 3.4.3; Fate and Transport; As pointed out in previous EPA comments, the physical processes active in the sediment/surface water part of the system may be quite different than those operating in the "aquifer". It is essential that the Navy addresses this issue in a more deliberate manner, which considers the interaction of ground water, surface water and sediments as one system for all expected types of contaminants. Specifically, the Navy needs to examine processes other than partitioning which may be having an effect on the fate and transport of certain contaminants. For example, build-up of metals in sediments may not be solely a function of partitioning. Rather, simple oxidation/precipitation of dissolved metals occurring in a reduced state (e.g. within a leachate plume) may occur as the dissolved plumes discharge into relatively more oxygenated surface waters/sediments. Such phenomena would not necessarily be explained by partitioning theory, and further, may be in operation despite low concentrations of dissolved metals in ground water. In other words, metals may have the potential to accumulate in the sediments over time, perhaps even if ground water concentrations are on average below MCLs or other risk-based levels. A cumulative mechanism of this type is not addressed by the current approach. The Navy will need to evaluate this and/or other potential fate and transport mechanisms in the context of the upcoming work plan.

31. Page 12, 1st ¶; EPA will insist that the subtidal environment is included in the planned pre-design sampling in order to verify the conceptual model of the site.

32. Page 13, Section 3.4.5; As was done for the Nature and Extent discussion, it would be useful to list the numbers and locations of samples that the Marine Ecological Risk conclusions presented here are based on.

33. Page 13, section 3.4.5, Marine Risks; both the Marine ERA and this proposed plan should revise these conclusions to state that the Site 09 shows a risk, even if the overall health of the subtitle area of Allen Harbor is not generally at risk. This Proposed Plan and a portion of the ERA deal with the CERCLA Site 9, Allen Harbor Landfill. The Administrative Record shows that the ecological community on and near the landfill is at moderate to high risk. As suggested by NOAA in the letter to the EPA and Navy dated 8-28-96 the bullets in this section should be changed to state that the risk to the health of the subtitle area of Allen Harbor may be low, but the ecological communities near the landfill are at moderate risk. Additionally the title should be changed to "Summary of Ecological Risks" and additional bullets should be added to describe the risks to the terrestrial receptors, such as:

- Potential risks to terrestrial wildlife from existing site conditions (e.g., contaminants in soils and sediment) were examined in the Facility-Wide Freshwater and Terrestrial ERA performed in support of the RI. The conclusions of the Allen Harbor EEZ evaluation of the ERA indicate moderate to high risks to:

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carnivorous, wading birds such as the great blue heron feeding in marine marshes and intertidal habitats, particularly from PCBs, pesticides and metals;

omnivorous small mammals such as the short-tailed shrew feeding in habitat associated with landfill soils, particularly from metals and PCBs;

carnivorous small mammals such as the mink feeding in aquatic habitat associated with marine marshes, particularly from PCBs, PAHs and metals.

34. Page 13, Section 3.4.5, 1st bullet; How "narrow" is the intertidal zone?

35. Page 13, section 3.4.6; add the reason for the modeling effort, such as, "The release was modeled because the Navy found an intact drum during the Phase I RI test pitting activities. The Navy decided to determine if a release of TCE would cause any additional risk to the environment since the existence of additional drums in the landfill was called into question."

36. Page 13, Section 3.4.6; Evaluation of Potential Future Risk; The text is misleading because it does not consider the ongoing input to ground water contamination from existing residual soil contamination, and it does not consider the potential cumulative effects in sediment resulting from the ongoing ground water discharge. In this context, comparison to AWQC may be insufficient.

37. Page 14, ¶ 2; The hypothetical future release scenario is illustrative, yet at the same time it contains many serious limitations. Primarily, only VOCs are addressed. For completeness, the potential role of metals transport via ground water to sediment and surface water should be examined in a deliberate manner similar to the approach used here for the TCE drum release scenario.

38. Page 14, Section 3.5; Proposed Remedial Action Objectives; This section de-emphasized the role of ground water in COC migration to an unreasonable extent. Language should be added which indicates potential risks from ground water will be clarified by the pre-design work to be done.

39. Page 16; add the following as a separate bullet under "Additional Measures":

Based on these studies, the Navy will undertake appropriate measures to remediate groundwater, sediment and landfill gas, including the upgradient slurry wall, and a downgradient sheet pile wall as required for groundwater remediation (Alternative 4).

40. Page 21, top of page; the editorial comment, "which in the Navy's estimation is low" should be removed. The fact remains that the Navy has contaminated the water under the landfill and out into Allen Harbor so that if people wanted to drink the ground-water or use it for showering

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purposes, they couldn't without receiving an unacceptable risk due to the exposure to the contamination. The groundwater is a risk to human health and the environment. EPA does not presently concur with the Navy's conclusion that ground water is an insignificant pathway of contaminant transport to Allen Harbor sediment. More information is needed.

41. Page 17, ¶ 1 and 2; The pre-design investigation which is planned in order to clarify the potential contribution of ground water to contaminant transport needs to be included here.

42. Page 21, first full ¶; delete the words "Alternative 2 would be protective of human health and the environment by " and replace with the following: "Alternative 2 would reduce the risk to human health and the environment by..."

43. Page 21, first full ¶; add a last sentence to the paragraph that states, "The habitat (inclusion of a dense stand of shrubs and tall grasses) will be expensive to maintain as a highly skilled person would have to be employed to determine which species to remove in order to maintain the cap integrity. The habit could have the potential to hide the various erosion problems due to the heterogeneity of the vegetation , which could cause the waste to become exposed more readily."

44. Page 21, second ¶; delete the words "Alternative 2 provides protection of human health and the environment by..." and replace with the following: "Alternative 2 would reduce the risk to human health and the environment by..."

45. Page 21, second ¶, second sentence line 4; eliminate the word "reduce" and insert the following: "...would be protective of human health and the environment because they would eliminate..."

46. Page 21, second ¶, third sentence; delete the words, " may have a marginal effect in reducing" and insert the words "would reduce".

47. Page 21, second ¶, second sentence; add the following on to the second sentence, "and provide a uniform vegetative cover which will enhance site inspection for erosion and settlement. The mowed native grass cover will act as a needed habitat for the Allen Harbor Watershed."

48. Page 21, last ¶; More effort is expended in this paragraph in describing why ground water is not linked to sediment contamination than to why the landfill fill material is linked. The relationship between landfill fill/soil and sediment - as presented here - is only circumstantial. The presence of debris, glass, etc. in sediments certainly suggests an erosional connection, but does nothing to demonstrate that the COCs in fill materials can be linked to the sediments.

49. Page 22, ¶ 3.8.2, line 11: Delete sentence which begins " A waiver can be . . . " and insert the following sentence:



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In order for a federal ARAR waiver to be granted by EPA, the Navy would have to demonstrate that it meets the ARAR waiver requirements of NCP (40 CFR 430(f)(1)).

50. Page 22, Item 3. Discussion is excessively biased in that it focusses only on the negatives of the multi-media cap and not on the negatives of the soil cap.

51. Page 22, ¶ 3.8.3, second ¶; delete the word similar in the first sentence and add an additional sentence that states, "In additional, Alternatives 3 and 4 would eliminate the exposure to groundwater and leachate."

52. Page 22, last ¶, second sentence; reword the second sentence of this paragraph to read, "Based on a lack of experience within the environmental field with the construction of caps on landfills located in 100-year flood plains, there is concern that extreme storm events may have the potential to cause cap erosion and maintenance problems".

53. Page 22, last ¶, after the third sentence add the following, "However, since a geomembrane may have the effect of resisting damage that a soil cap would not, a soil cap may need to be repaired more often. A double barrier cap also provides additional protection should the geomembrane become damaged, the underlying impermeable soil layer would still minimize infiltration and protect against erosion. If a soil cap becomes damaged, the resulting erosion may uncover waste more readily."

54. Page 23, first line; add the words, "both the soil cap and" before the words, "the multimedia cap liner materials to fail." The effects of settlement could be a cause for failure for both caps.

55. Page 23, first line and at the end of the second ¶; add the following: "The failure of a soil cap may not be as readily apparent due to the heterogeneity of the vegetation."

56. Page 23, ¶ 2; delete the first sentence, substitute the following: "The Navy is conducting studies to gather additional data which may establish that groundwater does not contribute significant risk to Maine receptors in Allen Harbor."

57. Page 23, ¶ 2, line 7; insert the following sentence before the words "The use of", "In the event that the additional studies show there is no groundwater contribution sediment exposure risk, Alternative 2 could provide long term protection of human health and the environment."

58. Page 23, ¶ 3; That ground water "may not" contribute significant risk is representative of a common thread throughout this document which subtly biases the reader to the Navy's current position. EPA's position is that there may be risk associated with ground water, and more importantly, this can not be determined with any certainty until further actions are taken (i.e. pre-design work plan).

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59. Page 23, ¶ 3, 1st sentence; the portion of the sentence after the comma should be removed ("...but would not be permanent due to the inevitable decay of the barrier materials"). The term "permanent" is a relative term. Nothing is permanent given enough time for degradation. However, given the typical 30 year time period usually considered for costing of remedial alternatives, then the vertical barrier can be considered permanent. The addition of this aside gives the appearance that the Navy is biased against this alternative.

60. Page 23, Item 4; Navy bias is contained in the phrase, "...there is expected to be little residual risk related to continued ground water migration." It would be more objective to include the fact that this opinion is not based on sufficient time-series data, and that future collection of such data will serve to confirm or refute the Navy's opinion.

61. Page 24, ¶ 1; Navy opinion that there would be "little difference...." between Alternatives 3 and 4 is somewhat conclusionary in that it is based on incomplete data.

62. Page 24, ¶ 3, 3rd sentence; since Alternative 2 does not eliminate the precipitation the sentence should be re-worded to state, "The reduction in potential risk due to exposures to sediment provided by Alternative 2 may be similar to the sediment risk reduction provided by Alternatives 3 and 4, if pre-design sampling results indicate that Site 09 groundwater migration is not a contributor to ecological risk due to sediment exposure at the Allen Harbor Landfill."

63. Page 24, ¶ 3; Alternative 2 discussion does not mention the potential for leachate generation by infiltration of precipitation downward through the waste which is different than "ground water flow through 15 to 20 % of the waste..".

64. Page 25. ¶ 6 (Implementability), line 9. Insert the following sentence before the word "Cap":

However, Alternative 2 does not meet ARARs.

65. Page 24, last ¶; It is stated here that the potential risk reduction for Alternative 2 would be less than that for Alternatives 3 and 4, yet the preceding paragraph listed a probable ground water flow through 15 to 20 % of the waste for Alternative 2. This range is identical for that described for Alternative 3, therefore it is unclear how the risks for the two scenarios differ. Additional language needs to be added to clarify how the two scenarios (Alternatives 2 and 3) differ (e.g. increased leachate generation under Alternative 2, etc.).

66. Page 24, last ¶; Ground water migration is described here (and in many other areas of the document) as a "minor" contributor to Allen Harbor eco risk. It be beneficial to the public's understanding of the site to be more specific as to how much of a contribution there is. As the Navy continues the studies in the harbor, the contribution can be better quantified.

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67. Page 26, section 3.9, Application of the Criteria, first sentence; change the term “....applicable and relevant and appropriate requirements...” to “applicable *or* relevant and appropriate requirements”.

68. Page 27; Section 3.10; Again, the Navy's bias, "that ground water migration may not be a significant contributor...", comes across. As pointed out, the Navy's interpretation is subject to the "uncertainties" mentioned here. The nature of these uncertainties could easily lead one to conclude that ground water is a significant contributor.

69. Site Map of Site 09; Map should also indicate the locations of surface water, sediment and ecological sampling which was conducted in the harbor area.

70. Figure 3; Given that there continues to be a slight disagreement between the Navy and EPA concerning the nature of ground water discharge from the deeper units, it would be more neutral to add a dashed line indicating potential upward discharge from the deeper portion of layer 2 as well as layer 3.

71. Figure 4; EPA does not use the term geocomposite to describe the flexible membrane liner (FML) or the geomembrane liner (GM) that should be included in the design of a RCRA “C” cap. Please change the term to either a FML or a GM. The second half of the low permeability layer that is required in the design of a RCRA “C” cap is the low permeability soil layer or an equivalent geocomposite clay liner (GCL). Please change both the text and the figure to be consistent with EPA requirements.

72. Table 1; the RAO for groundwater should include preventing ecological exposures to groundwater and the resulting leachate. For the record, it is appropriate to point out that "landfill constituents" is somewhat limited in terms of describing the universe of potential contaminant contributors to the various receiving media. A broader definition of "landfill constituents" would include metals (e.g. Fe, Mn, As) which may be present as native constituents in the aquifer materials, and which may be mobilized to the receiving media by virtue of the chemical conditions created by the landfill environment, even though they may or may not also be components of the waste materials placed into the landfill itself.

73. Page 30; Biological Degradation: Definition is misleading. By itself, sorption is not degradative. It should be noted that biodegradation and sorption are listed as separate natural attenuation processes under the subsequent entry for "natural attenuation".

74. Page 30; Brackish; Suggest adding "non-potable" to the definition.

75. Page 31; Downgradient; A "structure" is not needed in order to define downgradient. The definition should be re-written based on a more general point-of-reference analogy.

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76. Page 31; Fill; The distinction between waste, fill, and clean fill is muddled. Perhaps it would be better to also define these separately ?

77. Page 32; Hydrogeology; This definition should be expanded.

Page 33; Non-biological Degradation; Degradation implies disintegration into simpler chemical structures, which is somewhat incongruous with the definition supplied here. For example, volatilization and sorption do not necessarily involve any degradation. Please clarify.

78. Page 34, Silt; The permeability of silt relative to the other units should be touched on briefly.

79. Page 34; Soil Cap; It is unclear from the definition how storage of rainwater relates to water removal from the system.

80. Page 34; Till; Suggest adding the following: "Glacially-deposited soil of variable composition and grain-size distribution which can be....".

81. Page 35; Upgradient; A "structure" is not needed in order to define upgradient. The definition should be re-written based on a more general point-of-reference analogy.